

REMARKS

Status of Claims

Claims 1-40 are pending in the above-identified application. Claims 1, 11, 15, and 18 are independent.

Claim Rejections

Claims 1-40 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In particular, the Office Action alleges that the phrases “millimeter band” and “simultaneously receiving” are not defined.

Applicants disagree that millimeter band is a relative term. Millimeter band is a term of art that refers to frequencies between 30 GHz and 300 GHz ranging from one and 10 millimeter waves.

Applicants disagree that “simultaneously receiving” is not clearly defined. In the present invention, the frequency of signal waves are all the same. Contents of the same channel are transmitted completely at the same frequencies, and the receiver simultaneously receives the plurality of signal waves from the plurality of propagation paths (Specification, page 5, lines 7-27). Thus, simultaneous reception occurs because the transmitter transmits signal waves at the same frequency. Accordingly, Applicants are relying on the ordinary dictionary definition of “simultaneously” as well as that signal waves for the same channel are transmitted at the same frequency as the disclosure

of what is meant by simultaneously receiving a plurality of millimeter band signal waves.

Applicants respectfully request that the rejection be withdrawn.

Rejection under 35 U.S.C. § 103(a)

Claims 1-3, 7, 8, 11, 14, 33 and 35 have been rejected under 35 U.S.C. § 103(a) as being anticipated by Brunner et al. (U.S. Patent 6,301,470, hereinafter Brunner) in view of Hayashikura et al. (U.S. Patent 5,654,715, hereinafter Hayashikura). Applicants respectfully traverse that rejection.

The Office Action presents further arguments. In particular, the Office Action alleges that, "how the signals are received simultaneously are not claimed and clearly defined." Further, the Office Action concludes that, "with or without the hardware/circuitry/antenna which was not claimed that the signals are received simultaneously without it, the signals can be received simultaneously at the receiving arrayed antenna." In other words, the Office Action appears to allege that since the claims do not recite specific circuitry, there is the possibility that any receiver may receive signals simultaneously.

In order to clarify the term "capable of simultaneously receiving a plurality of said millimeter band signal waves," in claim 1, and comparable phrases in the other independent claims, the independent claims have been amended to recite that the receiver includes a receive antenna having a main lobe and a side lobe. Thus, each of the independent claims recite specific

structure that enables simultaneous reception of millimeter band signal waves. Support for the claim amendments can be found in the present specification at page 9, lines 5-8, and page 12, lines 19-24. Neither Brunner or Hayashikura teach a receive antenna having a main lobe and a side lobe arranged to simultaneously receive a plurality of millimeter band signal waves. Thus, at least for this reason, Applicants respectfully request that the rejection be withdrawn.

The Office Action alleges that “millimeter band is merely for intended use,” and presents statements to the effect that millimeter band is a matter of desired performance over previous microwaves. Applicants submit, however, that the present invention addresses a problem with the use of millimeter band waves. The present invention is not just a system that uses millimeter band waves. In other words, the present invention provides several approaches to arranging a system to ensure reliability of transmission and reception of millimeter waves, a problem particularly prevalent in high frequency spectrum waves in the millimeter band. None of the references of record specifically address that problem.

Brunner

Brunner is directed to radio communication receivers which operate to detect radio signals contemporaneously transmitted by first and second transmitters and to recover first and second data (Field of the Invention). The

radio communication receivers can be used for wide band code division multiple access (W-CDMA) signals, time division multiple access signals, or time division multiple access signals (column 6, lines 58-63). Radio signal wavefronts associated with radio signals are contemporaneously transmitted by one of two mobile stations MS1 and MS2 and are received by an antenna array 4 (with respect to Figure 1, see column 5, lines 12-20). In addition, as a result of multi-path propagation, a number of wave fronts which have been generated by the same transmitter may arrive at the antenna array. In the later case, a wave front detector 11 estimates the channel input response associated with each of the wave fronts and determines a relative strength of each of the wave fronts (column 5, lines 21-32). In accordance with the determined strength of the wave fronts, a spatio-temporal filter is able to determine whether data may be recovered from a particular set of wave fronts associated with the same transmitted radio signals.

Differences from Brunner and Hayashikura

Neither Brunner nor Hayashikura teach or suggest an arrangement of transmitter and receiver and propagated waves therein, in order to ensure reliable transmission in an environment having potential obstruction.

The present invention is directed to arrangements for a millimeter band signal transmitting and receiving system to ensure reliable reception of the millimeter band signal in an environment subject to obstruction. Therefore,

independent claim 1 is directed to an arrangement for a millimeter band signal transmitting/receiving system. In particular, the transmitting/receiving system is arranged such that a plurality of millimeter band signal waves over a plurality of propagation paths are simultaneously received at a receiver. That arrangement helps to ensure that at least one millimeter band signal wave is received, and when more than one signal wave is received, there is a minimum adverse affect (see specification, p. 8, ll. 19-28). Thus, the millimeter band transmitting/receiving system is ideally suited for transmitting video signals in a house.

A key difference between the Brunner and Hayashikura references and the present claimed invention is that the references are directed to transmitter and receiver components, whereas the present invention is directed to a stationary arrangement for a millimeter band transmitting/receiving system and associated propagation paths. **In the present invention by transmitting waves along specific propagation paths, the system ensures that at least one wave is received, but usually all waves are received, at a receiver.** This is particularly essential for indoor transmission of millimeter band waves that are easily obstructed by objects.

On the other hand, the arrangement of transmitters and receivers in Hayashikura is along a periphery of a vehicle. The signal received by a receiver

is that reflected by an arbitrary object, if any, which varies as the vehicle moves.

Also, Brunner is not directed to a stationary arrangement of transmitter/receiver and associated propagation paths since it is directed to a mobile radio telephone communications system. Furthermore, Brunner is directed to a radio communication receiver for a mobile phone system that utilizes the radio spectrum allocated to a wireless communication system (Brunner at column 1, lines 39-41). Such waves are not subject to a problem of obstruction by intervening objects. Rather, Brunner's radio communication receiver corrects a problem with radio receivers that handle time division multiple access signals, wherein reconstructed wave fronts from one transmitter may be corrupted by a stronger interfering radio signal wave front generated by another transmitter, to the effect that the data cannot be recovered (Brunner at column 2, lines 10-20). In other words, Brunner addresses a problem due to contemporaneously transmitted radio signals.

Still further, Applicants submit that Brunner fails to teach or suggest at least, "a receiver simultaneously receiving a plurality of said millimeter signal waves from a plurality of propagation paths including a line of sight propagation path to said transmitter and said at least one indirect propagation path." The Office Action alleges that the disclosure with respect to Figure 2 of Brunner teaches elements of the claimed invention (in particular, with respect

to the discussion of multi-path propagation, on column 5, lines 20-25). In that section, Brunner states that, "as a result of multi-path propagation, which is characteristic of radio communications, a number of wave fronts which have been generated by the same transmitter may arrive at the antenna array 4." Applicants submit that the multi-path propagation problem addressed by Brunner requires use of a spatial-temporal filter 8 because such wave fronts arrive at different times at different powers over the different paths (see Freeman at column 3, lines 12-49, which addresses the same problem). Thus, that section does not appear to teach or suggest a receiver capable of simultaneous reception of signal waves.

Furthermore, Brunner actually **teaches away** from simultaneous reception of signal waves. As mentioned above Brunner states that it is directed to "a radio communications receiver for detecting first and second contemporaneously transmitted radio signals representative of first and second data." Thus, Applicants submit that Brunner fails to disclose a receiver receiving millimeter band signal waves simultaneously.

Still further, Brunner fails to disclose a stationary arrangement of a transmitter and receiver. Instead, Brunner is directed to a mobile radio telephone communications system where at least the transmitter is intended for mobile use. The receiver in Brunner is not intended for receiving at least

one indirect propagation path simultaneously with a line of sight propagation path from a stationary transmitter.

There is insufficient evidence that would support the combination of Brunner and Hayashikura

Applicants direct the Examiner's attention to two recent cases decided by the Court of Appeals for the Federal Circuit (CAFC), In re Dembiczak, 50 USPQ2d 1614 (Fed.Cir. 1999) and In re Kotzab, 55 USPQ2d 1313 (Fed.Cir. 2000). Both of these cases set forth very rigorous requirements for establishing a prima facie case of obviousness under 35 U.S.C. § 103(a).

To establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant. The motivation suggestion or teaching may come explicitly from the statements in the prior art, the knowledge of one of ordinary skill art, or in some cases, the nature of the problem to be solved. See Dembiczak 50 USPQ at 1614 (Fed.Cir. 1999). In Kotzab, the CAFC held that even though various elements of the claimed invention were present (in two separate embodiments of the same prior art reference), there was no motivation to combine the elements from the separate embodiments, based on the teachings in the prior art.

In order to establish a prima facie case of obviousness under 35 U.S.C. § 103(a), the Examiner must provide particular findings as to why the two pieces

of prior art are combinable. See Dembiczak 50 USPQ2d at 1617. Broad conclusory statements standing alone are not "evidence".

The Office Action admits that Brunner does not disclose a millimeter band signal transmitting/receiving system, and a millimeter band propagation signal, transmitting and receiving a millimeter band signal wave. Instead, the Office Action alleges that Hayashikura discloses a millimeter band signal transmitting/receiving system, and a millimeter band propagation signal, transmitting and receiving a millimeter band signal wave (col. 2, lines 7-18; col. 3, lines 60-67). The Office Action then concludes that, "it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the high frequency band signal of Brunner with the millimeter band signal in order to fully utilize the continuous spectrum by broadening the intended use of the signal wave for commercial purposes merely by using an alternative frequency in a higher frequency band than usual depending on the available spectrum resource of the system."

Applicants strongly disagree that one of ordinary skill would look to the teachings of Hayashikura to modify the system of Brunner at least for the reason that millimeter band signals would suffer greatly from the problem of obstruction of signal in a mobile radio telephone communications system. Also, Hayashikura does not address the problem of avoiding obstruction. To the contrary, Hayashikura teaches detection of the

distance to an obstacle. Specifically, Hayashikura teaches detection of obstacles by phase difference between transmitted and reflected received signal (column 6, lines 14-19). Thus, Hayashikura's system uses obstruction, i.e. as reflection, and does not seek to avoid it.

In addition, the motivation statement provided in the rejection does not come from explicit statements in the prior art, or the nature of a problem to be solved. As noted above, one of ordinary skill in the art would not rely on the teachings of Hayashikura for modifying Brunner.

Accordingly, at least for these reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness of claim 1.

Claim 11 is also directed to a millimeter band signal transmitting/receiving system that includes, among other things, a stationary receiver including a receive antenna having a main lobe and a side lobe arranged to simultaneously receive a plurality of millimeter band signal waves. Thus, at least for the same reason as above for claim 1, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 11, as well.

With respect to the dependent claims 2, 3, 7, 8, 14, 33 and 35, for the same reasons as above for independent claims 1 and 11, Applicants submit that Brunner does not teach or suggest elements in those claims, as well. In addition, further with respect to claim 2, Applicants disagree that Brunner teaches a reflector that is arranged to reflect a millimeter signal wave and

direct the reflected signal to the receiver. The Office Action alleges that Figure 2 teaches that claimed limitation. However, Applicants submit that Figure 2 of Brunner only shows an arbitrarily reflected radio frequency signal and not a reflector that has been arranged to direct a signal. As has been mentioned before, the communications system in Brunner involves mobile stations. Such a system having a benefit of mobility does not lend itself to a stationary arrangement of reflectors relative to the transmitter and receiver. The Office Action provides a further argument that the claimed “arranging” a reflector “is merely a choice of measuring the signal from an intended angle or direction with a certain distance from the transmitter which will become in contact with surrounding reflectors which could be arranged in order to measure the reflected signals.” Applicants submit, however, that no evidence is provided in Brunner of measuring the signal from an intended angle or direction with a certain distance from the transmitter. Further, Applicants submit that such measurement would not even be practical as Brunner is directed to mobile communication. Thus, Applicants submit that Brunner does not teach or suggest a reflector arranged to reflect a signal wave transmitted from said transmitter and direct the signal wave to the receiver. Accordingly, Applicants submit that at least for this additional reason the rejection fails to establish *prima facie* obviousness for claim 2.

Further with respect to claim 8, Applicants disagree that Brunner discloses wherein the receiver always simultaneously receives the plurality of signal waves from a plurality of propagation paths in a normal state. The Office Action alleges that Figure 2 of Brunner teaches this limitation. However, the specification of Brunner clearly expresses where wave fronts which have been generated by the same transmitter may arrive at the antenna array 4 (column 5, lines 21-25). More so, Brunner specifically discloses that it is directed to contemporaneously transmitted radio signals. Thus, Brunner does not disclose, for example, wave fronts which always simultaneously arrive at the antenna array.

Furthermore, Brunner, being directed to a communications system having mobile stations teaches away from such a limitation. Brunner provides a solution to the multi-path problem, not a requirement that the signals be sent via multi-path and simultaneously. Thus, Applicants submit that Brunner fails to teach or suggest the claimed receiver always simultaneously receiving the plurality of signal waves. Similarly, the same argument can be made for claim 14 as was made for claim 8. Accordingly, at least for this additional reason, Applicants submit that Brunner does not anticipate claims 8 and 14.

**Rejection under 35 U.S.C. § 103(a) over
Brunner, Hayashikura and Lewiner**

Claims 18-23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner in view of Hayashikura and further in view of Lewiner (U.S. Patent 5,926,768). Applicants respectfully traverse this rejection.

The Office Action relies on Brunner and Hayashikura for teaching the claimed invention of claim 18, except for the limitations associated with a normal state and an obstructed state of the transmitting/receiving system. The Office Action instead relies on Lewiner for making up for the deficiency in Brunner. In particular, the Office Action alleges that Lewiner discloses the limitation wherein, in an obstructed state when the line of sight propagation path is obstructed, the receiver receives the signal through each of the propagation paths except the line of sight propagation path (relying in column 5, lines 13-16). Applicants disagree that the combination of Brunner, Hayashikura and Lewiner teach all claimed elements.

The same arguments as in the above for claim 1 apply as well to claim 18. In addition, Applicants submit that Lewiner does not make up for the deficiencies in Brunner and Hayashikura. Specifically, Lewiner does not disclose a normal state and an alternative obstructed state for the system. Claim 18 defines the normal state of the transmitting/receiving system as "when said line of sight propagation path is unobstructed," and defines the

obstructed state as “when said line of sight propagation path is obstructed.” Further, the claim recites that in the obstructed state, “said receiver receives the signal through each of the plurality of propagation paths except said line of sight propagation path.” In other words, in the obstructed state the receiver does not receive the signal through the line of sight propagation path.

The Office Action presents an argument that because Lewiner’s disclosure teaches that signals are received in an indirect path that, “any argument regarding the obstruction state is irrelevant to the claimed language.” Applicants strongly disagree. The claim specifically recites “transmitting a signal ... including a line of sight propagation path” and the phrase “obstruction state.” Those limitations cannot be ignored as being irrelevant. Thus, Applicants submit that Lewiner does not at least make up for the deficiency of Brunner and Hayashikura of not teaching or suggesting a normal state and an alternative obstructed state of operation of the transmitting/receiving system. Accordingly, for the above reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 18.

With respect to claims 19-26, 31, 32, and 34, Applicants submit that Brunner, Hayashikura, and Lewiner, either alone or in combination, fail to teach or suggest all claimed elements for those claims as well.

**Claim Rejection under 35 U.S.C. § 103 as being unpatentable over
Brunner, Hayashikura, Lewiner, and Kagami**

Claims 24-26, 31, 32, 34 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, Hayashikura, Kagami et al. (U.S. Patent 5,479,443).

The Office Action relies on Kagami for teaching the additional claimed elements of wherein the at least one transmitter includes two transmitters and two associated transmit antennas, two transmitters synchronized with each other, and a local oscillator in each of a plurality of transmitters for generating a signal wave at the same frequency, or, for teaching a common local oscillator between transmitters. The motivation statement provided by the Office Action states that, "it would have been obvious to one of ordinary skill in the art at the time the invention was made to use two transmitters in order to assure that the signal can be transmitted via diversity transmission."

Kagami, however, is directed to a radio relay system having a transmitting terminal station and at least one repeater station. Brunner and Lewiner are directed to mobile radio telephone communications systems where the transmitters are in mobile units. In Hayashikura, transmitters are along the periphery of a vehicle. Kagami does not appear to at least teach application of its radio-relay system to mobile wireless communications or vehicles. Thus, Applicants submit that the motivation statement does not come from statements in the prior art, knowledge of one of ordinary skill, or the nature of

a problem to be solved. Furthermore, neither the Office Action, nor any of the references, provide a motivation to incorporate a local oscillator generating the same frequency for each of a plurality of transmitters, or to incorporate a common oscillator for a plurality of transmitters, where the transmitters are, for example, the mobile stations in Brunner or Lewiner. Thus, Applicants submit that a *prima facie* case of obviousness has not been made for combining Brunner, Lewiner, Hayashikura and Kagami. Thus, claims 24-26 are patentable over Kagami and Brunner, Hayashikura, and Lewiner, either alone or in combination. Accordingly, Applicants request that the rejection of claims 24-26 under 35 U.S.C. 103 be withdrawn.

With respect to claims 31, 32, and 34, Applicants submit that Brunner, Hayashikura, and Lewiner, either alone or in combination, fail to teach or suggest all claimed elements for those claims as well.

Rejection of Claim 4

Claim 4 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner in view of Hayashikura, and further in view of Huibers et al. (U.S. Patent 6,529,310). Applicants respectfully traverse this rejection.

The Office Action alleges that Brunner and Hayashikura disclose the millimeter band signal transmitting/receiving system according to claim 2, and relies on Huibers as disclosing a reflector that has thin film including

aluminum. The Office Action goes on to conclude that it would have been obvious to one of ordinary skill in the art to apply a material such as aluminum as a material in the reflector of Brunner. Applicants disagree.

Brunner discloses a mobile radio telephone communications system which appears to suffer from reflection off of objects (based on Figure 2). It does not appear in Brunner, however, that there is any control over the design of the objects. The system is most likely intended to deal with whatever objects happen to be in the path of wave fronts. In any case, there is definitely no teaching in Brunner of the choice of material for any reflective object.

Huibers is directed to a deflectable spatial light modulator. Applicants submit that it is highly unlikely that one of ordinary skill in the art would consider applying the teachings of a spatial light modulator as a reflector of wave signals in a mobile radio telephone communications system such as that in Brunner. It is also highly unlikely that one of ordinary skill in the art would apply a specific material to an arbitrary object of Brunner. Accordingly, at least for these reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 4.

**Rejection under 35 U.S.C. § 103(a) over
Freeburg, Brunner, and Hayashikura**

Claims 15-17 and 36 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Freeburg (U.S. Patent 5,095,535) in view of Brunner

and further in view of Hayashikura. Applicants respectfully traverse this rejection.

The Office Action alleges that Freeburg discloses the claimed house with a millimeter band signal transmitting/receiving system (relying on column 3, lines 15-55, and column 5, lines 9-20), except for a receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths. The Office Action instead relies on Brunner for teaching that deficiency in Freeburg. Applicants disagree.

Freeburg is directed to high data rate transmission on a radio frequency communication channel in a cellular radiotelephone communication system employed within a building (Freeburg at column 2, lines 62-68). Freeburg does not disclose millimeter band signals, and does not disclose a transmitter and an associated receiver for the millimeter band signals. Thus, Freeburg does not teach or suggest all of the claimed elements except for a receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths, as alleged in the Office Action.

Further, Freeburg defines and addresses the problem of multipath interference. Multipath interference is defined as when a signal that is transmitted at one terminal is received at the other terminal at two different times (Freeburg at column 3, lines 12-14). The multipath interference problem

is partly addressed through the use of multiple directional antennas, or alternatively through a steerable antenna (Freeburg at column 3, lines 36-42).

Brunner also addresses the multipath interference problem. Brunner states that, “as a result of multi-path propagation, which is characteristic of radio communications, a number of wave fronts which have been generated by the same transmitter may arrive at the antenna array 4.” Applicants submit that the multi-path propagation problem addressed in Brunner requires use of a spatio-temporal filter 8 because the wave fronts arrive at different times at different powers over the different paths (see Freeman at column 3, lines 12-49, which addresses the same problem). Also, Brunner specifically states that it is directed to detecting contemporaneously transmitted radio signals. Thus, similar to the above for claims 1 and 11, Applicants submit that Brunner fails to teach or suggest simultaneous reception of a plurality of millimeter band signal waves.

Furthermore, as mentioned above, in order to clarify the term “simultaneously receiving a plurality of millimeter band signal waves,” in claim 15, claim 15 has been amended to recite that the receiver includes a receive antenna having a main lobe and a side lobe. Thus, the claim recites specific structure that enables simultaneous reception of millimeter band signal waves. Brunner fails to teach a receive antenna having a main lobe and a side lobe arranged to simultaneously receive a plurality of millimeter band signal waves.

Thus, at least for this reason, Applicants respectfully request that the rejection be withdrawn.

Simultaneous reception is not inherent in Brunner

To establish inherency, the extrinsic evidence “must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the alleged inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Once a reference teaching a product appearing to be substantially identical is made the basis of a rejection, and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to the applicant to show an unobvious difference. “The PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Whether the rejection is based on ‘inherency’ under 35 U.S.C. § 102, on ‘*prima facie* obviousness’ under 35 U.S.C. § 103, jointly or alternatively, the burden of proof

is the same.” *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

The Office Action provides an argument that, “the fact that simultaneous reception is possible at the receiver is all that is considered to be relevant to the claims.” Brunner does appear to teach that wave fronts which have been generated by the same transmitter may arrive at the antenna array. Thus, it does appear to be possible for the antenna array to simultaneously receive wave fronts. However, as indicated in the case law above, the mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Thus, Applicants submit that Brunner fails to make up for the deficiency in Freeburg, and that the rejection fails to establish *prima facie* obviousness of claim 15.

With respect to the dependent claims 16, 17 and 36, Applicants submit that at least for the same reason as above for claim 15, the rejection fails to establish *prima facie* obviousness for those claims as well. In addition, with respect to claim 17, Applicants submit that Freeburg does not teach the claimed reflector arranged inside a structural component defining an internal space, as alleged in the Office Action. Claim 17 is directed to, for example, a picture having on its back surface an aluminum foil used as a reflector (Specification at page 9, lines 25-31). Freeburg does disclose “many reflecting surfaces” located in an indoor/office application (Freeburg at column 4, lines 9-

18). Further, Freeburg discloses an apparatus for dealing multipath interference due to the reflecting surfaces. However, Freeburg does not disclose arranging reflectors, and much less arranging reflectors inside a structural component.

The Office Action provides a further argument that the claimed “arranging” a reflector “is merely a choice of measuring the signal from an intended angle or direction with a certain distance from the transmitter which will become in contact with surrounding reflectors which could be arranged in order to measure the reflected signals.” Applicants submit, however, that no evidence is provided in Freeburg of measuring the signal from an intended angle or direction with a certain distance from the transmitter. Thus, Applicants submit that at least for this additional reason, the rejection fails to establish *prima facie* obviousness of claim 17 as well.

Remaining Claim Rejections

Dependent claims 5-6 and 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, as applied to claim 1, in view of Hayashikura and further in view of Freeburg. Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, Hayashikura, and Freeburg, as applied to claim 9, and further in view of Wax et al. (U.S. Patent 6,249,680, hereinafter Wax). Claim 37 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Freeburg, Hayashikura, and

Brunner, as applied to claim 15, in view of Lewiner. Claim 30 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, Hayashikura, and Lewiner, as applied to claim 18, in view of Freeburg. Claims 12 and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner and Hayashikura, as applied to claim 11, in view of Kagami (U.S. Patent 5,479,443). Claim 27 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, Hayashikura, and Lewiner, as applied to claim 18, in view of Evans et al. (U.S. Patent 5,920,813, hereinafter Evans). Claims 28 and 29 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner, Hayashikura, and Lewiner, as applied to claim 18, in view of Keskitalo et al. (U.S. Patent 6,128,486, hereinafter Keskitalo). Claims 38 and 39 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brunner and Hayashikura, as applied to claim 1, in view of Keskitalo. Claim 40 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Freeburg and Brunner and Hayashikura, as applied to claim 15, in view of Keskitalo.

As for the rejections of the dependent claims, some of which are based on additional references of Wax, Evans, Kagami and Keskitalo, for at least the same reasons as above for the respective independent claims, Applicants submit that all claimed elements are not taught or suggested for these claims as well. Similar to Brunner, none of Wax, Evans, Kagami and Keskitalo are

directed to millimeter wave transmitting/receiving system, and much less do they address the problem of obstruction that occurs with millimeter band wave transmission. Thus, for this reason none of these additional references, either alone or in combination, at least make up for the deficiency of Brunner and Hayashikura. Accordingly, Applicants submit that the rejections fail to establish *prima facie* obviousness for the dependent claims as well.

In addition, with respect to the rejection of claims 5-6 and 9, Applicants disagree that Brunner, Hayashikura and Freeburg, either alone or in combination, teach or suggest the additional elements recited in those claims.

Claims 5-6 are directed to further limitations for the reflector, recited in claim 2. The reflector is arranged to redirect a signal wave to the receiver. Alternative materials have been found to provide suitable reflection of the wave to give an adequate intensity, and at the same time not impair the appearance of the house (specification, p. 10, l. 21, to p. 11, l. 17). The Office Action relies on Freeburg for teaching the missing reflector materials not disclosed in Brunner. Using claim 4 as an exemplary claim, the Office Action states as a reason to rely on the teachings of Freeburg, "it would have been obvious to one of ordinary skill in the art to use a certain kind of material such as aluminum or metal to reflect signals." Applicants submit that one of ordinary skill in the art would not be motivated to apply materials such as aluminum for use as reflectors in the wireless communication system of Brunner.

Brunner is directed to a wireless communications system subject to multi-path propagation. The objects that typically cause the multi-path signals are objects in the environment, such as buildings, hills, or other structures. They are not objects that would be arranged as part of the design of the system. Thus, Applicants submit that the teachings in Freeburg are not of the nature that would be in any way combinable with the system of Brunner. For example, Applicants submit that one of ordinary skill in the art would not be motivated to construct buildings to have aluminum for purposes of serving as reflectors for guiding waves to a base station. Furthermore, the motivation statements made in the Office Action are conclusionary in nature and do not provide a motivation, suggestion, or teaching of the desirability of combining the teachings of Freeburg with Brunner. Thus, Applicants submit that the Office Action has failed to present a *prima facie* case of obviousness for claims 4-6.

In addition, with respect to claim 9, the Office Action relies on Freeburg for teaching the claimed transmitter spaced by a prescribed distance from the structural component for transmitting the signal wave at a prescribed transmission angle. Applicants submit, however, that Freeburg does not specifically teach or suggest a prescribed distance and prescribed transmission angle, and actually teaches away from such an arrangement between the structural component and transmitter. Freeburg instead discloses where the

directional antennas have little or no relationship with the actual physical coverage, and are primarily used to control multipath (Freeburg at column 4, lines 14-18). Thus, for this additional reason, Applicants submit that Freeburg and Brunner, either alone or in combination, fail to teach all claimed elements. Further, even if a *prima facie* case of obviousness has been made, Freeburg teaches away from the claimed invention. Accordingly, for these reasons, Applicants respectfully request that the rejection of claims 4-6 and 9 be withdrawn.

In addition, with respect to the rejection of claims 12 and 13, Applicants disagree that Brunner, Hayashikura, and Kagami, either alone or in combination, teach or suggest the additional elements recited in those claims.

Claims 12 and 13 are further directed to the transmitter/receiving system having a plurality of transmitters, each including a local oscillator oscillating at a prescribed frequency for generating a signal wave at the same frequency and/or in synchronization with each other. In the present invention, local oscillator frequencies for the transmitters are the same so that frequencies of the corresponding transmitted waves are made the same, in order to prevent interruption. The Office Action relies on Kagami for teaching the claimed limitations of a local oscillator in each of a plurality of transmitters for generating a signal wave at the same frequency, or, for teaching a common local oscillator between transmitters.

Kagami, however, is directed to a radio relay system and no teaching or suggestion is provided for combining the teachings of Kagami with the location finding method of Brunner. The Office Action states as a motivation for claim 12 that, "it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a common frequency for the transmitters to generate simultaneous signals." Applicants submit, however, that the motivation statement does not provide a rational for combining the teachings of Kagami with Brunner. Neither the Office Action, nor either the Brunner or Kagami references, provide a motivation to incorporate a local oscillator generating the same frequency for each of a plurality of transmitters, or to incorporate a common oscillator for a plurality of transmitters, where the transmitters are, for example, the mobile stations in Brunner. In other words, Kagami does not teach or suggest, for example, a rational for having mobile stations, such as in Brunner, transmit at the same frequency so that a receiver, such as Brunner's radio communications receiver, can receive their signals simultaneously. Thus, Applicants submit that a *prima facie* case of obviousness has not been made for combining Brunner and Kagami. Thus, claims 12 and 13 are not unpatentable over Kagami and Brunner, either alone or in combination. Accordingly, Applicants request that the rejection of claims 12 and 13 under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

In view of the above amendments and remarks, reconsideration of the rejections and allowance of each of claims 1-40 in connection with the present application are earnestly solicited.

If there are any outstanding matters remaining in this application, the Examiner is invited to contact Robert W. Downs (Registration Number 48,222) in the Washington, D.C. area at (703) 205-8000 in order to discuss these matters.

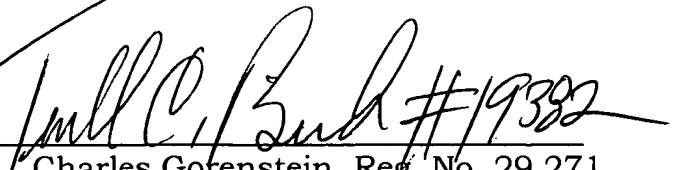
Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a ~~one~~ (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By


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